Seat No.: _____ Enrolment No._____

GUJARAT TECHNOLOGICAL UNIVERSITY

M.E Sem-II Remedial Examination December 2010

Subject code: 721107

Subject Name: Energy Conservation & Management

Date: 23 /12 /2010 **Time: 02.30 pm – 05.00 pm**

Total Marks: 60

Instructions:

1. **Attempt all questions.**
2. **Make suitable assumptions wherever necessary.**
3. **Figures to the right indicate full marks.**

Q.1	**(a)**	Explain energy conservation in I.C. Engines.	**06**
	(b)	Explain co-generation of process steam and electricity with neat sketch.	**06**
Q.2	**(a)**	Explain energy saving opportunities for steam supply system.	**06**
	(b)	Classify the energy audit methodology and explain detailed energy audit.	**06**
		OR	
	(b)	What are the different heat loads? How solar loads can be calculated?	**06**
Q.3	**(a)**	Explain principles of energy conservation.	**06**
	(b)	Explain heat pipe with neat sketch along with its application.	**06**
		OR	
Q.3	**(a)**	Explain flywheel effect of a building material and state factors which effect the cooling load.	**06**
	(b)	Explain active power, reactive power and power factor.	**06**
Q.4	**(a)**	Explain waste heat recovery by a bottoming cycle.	**06**
	(b)	An air pre heater is used to cool the products of combustion from a furnace while heating the air for combustion. The rate of flow of product is 12.5 kg/sec and products are cooled from the 300^0C to 200^0C and for the products at this temperature Cp=1.09 KJ/KgK. The rate of air flow is 11.5 kg/sec, the initial temperature is 27^0C and for the air Cp=1.005 KJ/KgK. Estimate the quantity of waste heat available.	**06**
		OR	
Q.4	**(a)**	Explain energy saving methods in building.	**06**
	(b)	How losses occurring in electric power supply system can be reduced?	**06**
Q.5	**(a)**	Explain technique of electrical load analysis for obtaining a short term view of industrial electricity use.	**06**
	(b)	Explain different factors that influence the thermal performance of a building.	**06**
		OR	
Q.5	**(a)**	Explain waste heat management in industry.	**06**
	(b)	Explain importance of heat pump for waste heat recovery purposes.	**06**

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